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The Protection of the Rhine Against Pollution

INTRODUCTION

Although the Rhine is not one of the largest rivers in the world, it is of vital importance for Western Europe.¹ The Rhine Basin has a population of approximately forty million and includes the majority of the inhabitants of Switzerland and the Netherlands, and about one-third of the population of the Federal Republic of Germany. The Rhine catchment area lies in parts of France, Belgium, Luxembourg, Italy, Austria, and Liechtenstein, and is one of the most important regions of these industrialized countries as far as population and economic activities are concerned. The high concentration of population and industry results in using the river as an outlet for much of the waste produced in the Rhine basin. The waste products reaching the Netherlands in the Rhine have been estimated to be one-sixth in weight of the volume carried by shipping on the river in both directions.²

Historically, the Rhine has been used for fishing and for navigation. The first international regulations relating to the protection of the river against environmental harm concern both of these activities. On June 6, 1885, a Treaty concerning the Regulation of Salmon Fishery in the Rhine River Basin was signed by the river states,³ and since the very first years of the twentieth century international conventions have regulated the transport of corrosive and poisonous substances⁴ and carriage of inflammable substances on the Rhine.⁵

These instruments, however, did not envisage the main problem causing

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1. The length of the Rhine River is 1250 kilometers and its catchment area is 100,000 square kilometers.

2. Van der Veen, *The Significance of the River Rhine for the Environment and for Public Health*, in *RHINE POLLUTION* 29-32 (1978).

3. Convention Concerning the Regulation of Salmon Fishing in the Rhine River Basin, June 30, 1885, *reprinted in* 1 *INTERNATIONAL ENVIRONMENTAL LAW, MULTILATERAL TREATIES* 885:48 (W.E. Burhenne & E. Schmidt eds.) [hereinafter cited as *INT'L ENV'T'L. L.*].

4. Convention between the Riverain States of the Rhine respecting Regulations Governing the Transport of Corrosive and Poisonous Substances, May 11, 1900, *reprinted in* 25 *INTERNATIONAL PROTECTION OF THE ENVIRONMENT, TREATIES AND RELATED DOCUMENTS* 214 (B. Ruster, B. Simma & M. Bock eds. 1983) [hereinafter cited as *INTERNATIONAL PROTECTION*].

5. Convention Relative to the Carriage of Inflammable Substances on the Rhine, September 4, 1902, *reprinted in* 25 *INTERNATIONAL PROTECTION* 220, *id.*

the pollution of the river: the dumping of liquid and solid waste and of used water. After 1948, in the international commission created by the 1885 Treaty on Salmon Fishery, the Netherlands delegation raised this problem.⁶ At the end of a rather long evolution, an agreement was finally signed in Berne on April 29, 1963, creating an international Commission for the Protection of the Rhine Against Pollution.⁷

In spite of the growing consciousness that the romantic Rhine, home of Lorelei, was being transformed into an open sewer, the situation did not improve for years. During the period 1973-75 at the point where the Rhine flows into the Netherlands, the river carried yearly an average of 47 tons of mercury, 400 tons of arsenic, 130 tons of cadmium, 1,600 tons of lead, 1,500 tons of copper, 1,200 tons of zinc, 2,600 tons of chromium, and 12 million tons of chlorides.⁸ Something had to be done and it could be done only at an international level through cooperation among the river states.

Of course, rules exist in international law which could be applied to such a situation. The general obligation of states not to knowingly allow the use of their territories for acts contrary to the rights of other states applies to environmental damage. This general obligation has been stated by the International Court of Justice in the Corfu Channel case,⁹ and by arbitration tribunals in the Trail Smelter¹⁰ and Lake Lanoux¹¹ cases. Principle 21 of the Stockholm Declaration¹² and a number of texts referring to it may also be invoked,¹³ as well as various declarations and principles relating to transfrontier pollution¹⁴ and shared resources, to assert the principle that states not knowingly pollute their neighbors' resources.¹⁵ Because no other contributions to the present volume deal

6. C.A. Colliard, *Evolution et aspects actuels du regime juridique des flueves internationaux*, 125 RECUEIL DES COURS DE L'ACADEMIE DE DROIT INTERNATIONAL 396 (1968).

7. Agreement Concerning the International Commission for the Protection of the Rhine Against Pollution, April 29, 1963, 994 U.N.T.S. 3, reprinted in 2 INT'L ENV'T'L. L., *supra* note 3, at 963:31.

8. Van der Veen, *L'etat du Rhin* in Report of the Conference interparlementaire sur la pollution du Rhin 10 (Feb. 24-25, 1977).

9. Corfu Channel case, 1949 I.C.J. 22.

10. Trail Smelter Case, 3 Int'l Arb. Awards 1905 (Apr. 16, 1938 and Mar. 11, 1941).

11. Lake Lanoux case, 12 Int'l Arb. Awards 285, 303 (1956).

12. UNEP, IN DEFENSE OF THE EARTH 47 (1981).

13. See, in particular art. 30 of the Charter of Economic Rights and Duties of States, United Nations General Assembly Resolution 3281 (XXIX); the Convention on Long-Range Transboundary Air Pollution, Nov. 13, 1979, Preamble, reprinted in 4 INT'L ENV'T'L. L., *supra* note 3, at 979-84; United Nations Convention on the Law of the Sea, Dec. 10, 1982, art. 794(2), reprinted in 4 INT'L ENV'T'L. L., *supra* note 3, at 982:92/50.

14. See, in particular, the Principles concerning Transfrontier Pollution, adopted by the Council of OECD on 14 November 1974, C (74) 224, reprinted in INTERNATIONAL PROTECTION, *supra* note 4, at 316, and the other recommendations by OECD adopted for its implementation.

15. UNEP, Principles of Conduct in the Field of the Environment for the Guidance of the States in the Conservation and Harmonious Utilization of Natural Resources Shared by Two or More States, UNEP GC.i/L.6 Add.5 (May 19, 1978), 1978 I.L.M. 1091.

with this specific problem, this article reviews international rules concerning fresh water pollution in general insofar as they apply to the Rhine, whether at a worldwide or a regional level; but more specifically, this article will review regulations which have been drafted for the control of pollution of the Rhine.

GENERAL RULES CONCERNING RIVER POLLUTION

Amazingly, only a few generally accepted principles specifically prohibit the pollution of rivers and lakes. Principle Six of the Stockholm Declaration, which concerns pollution in general, does not explicitly mention the prohibition of river and lake pollution. Moreover, only several recommendations of the Stockholm Action Plan are focused on river and lake pollution.¹⁶ The recommendations are essentially orientated towards the creation of machineries and the drafting of programs. Recommendation 51, however, includes a paragraph which is fundamental to concerns of transboundary pollution:

- b) The following principles should be considered by the states concerned when appropriate:
 - i) Nations agree that when major water resource activities are contemplated that may have a significant environmental effect on another country, the other country should be notified well in advance of the activity envisaged;
 - ii) The basic objective of all water resource use and development activities from the environmental point of view is to ensure the best use of water and to avoid its pollution in each country;
 - iii) The net benefits of hydrologic regions common to more than one national jurisdiction are to be shared equitably by the nations affected.¹⁷

More detailed principles have been developed in a rather large geographical framework, that of the Organization for Economic Cooperation and Development (OECD). The OECD includes not only all European non-socialist states as members, but also the United States, Canada, Japan, Australia, and New Zealand. A general recommendation on Water Management Policies and Instruments emphasizes the importance of long-term water management plans and an integrated approach in an international framework, if necessary.¹⁸ All relevant aspects of water quantity

16. Declaration of the United Nations Conference on the Human Environment, Recommendations 50-51, U.N. Doc. A/CONF.48/14 (1972), *reprinted in* 1 INTERNATIONAL PROTECTION, *supra* note 4, at 132-33.

17. IN DEFENSE OF THE EARTH, *supra* note 12, at 73.

18. Recommendation of the Council on Water Management Policies and Instruments adopted on 5 April 1978, C (78) 4 (Final), *reprinted in* 26 INTERNATIONAL PROTECTION, *supra* note 4, at 259.

and quality should be considered, including abstraction and discharge, supply and protection, the rational and equitable allocation of water resources among all users with a priority for potable water, and a river basin oriented management beyond the scope of local management.

More detailed provisions are found in specific recommendations, such as the Strategies for Specific Water Pollutants Control,¹⁹ the Determination of the Biodegradability of Anionic Synthetic Surface Active Agents,²⁰ and the Control of Eutrophication of Waters.²¹ And, of course, rules concerning the control of specific chemical substances such as polychlorinated biphenyls²² or mercury²³ will also have an effect on the control of river pollution.

Actions concerning river pollution have also been undertaken in the Council of Europe in a narrower, exclusively European geographic framework. On May 6, 1968, a European Water Charter was proclaimed. The charter was one of the first texts issued by an international organization with a general scope in the field of protection of the environment. The 12 principles contained in the charter are now well known and accepted, although at the beginning of the "ecological era" they could be considered as revolutionary. The principles emphasize, among other things: that fresh water resources are not inexhaustible; water pollution harms man and other living creatures; water is a common heritage; and water knows no frontiers and demands international cooperation. Also, in 1968, a European Agreement on the Restriction of the Use of Certain Detergents in Washing and Cleaning Products was signed by member states of the Council of Europe. According to the treaty, measures shall be adopted to ensure that washing and cleaning products containing one or more synthetic detergents are not put on the market unless the detergents which they contain are at least eighty percent susceptible to biological degradation.²⁴ The Council of Europe has also undertaken the drafting of a

19. Recommendation of the Council on Strategies for Specific Water Pollutants Control adopted on 14 November 1974, C (74) 221, *reprinted in* 1 INTERNATIONAL PROTECTION, *supra* note 4, at 308.

20. Recommendation of the Council on the Determination of the Biodegradability of Anionic Synthetic Surface Active Agents adopted on 13 July, 1971, C (71) 83 (Final), *reprinted in* 26 INTERNATIONAL PROTECTION, *supra* note 4, at 109.

21. Recommendation of the Council on the Eutrophication of Waters adopted on 14 November 1974, C (74) 220, *reprinted in* 1 INTERNATIONAL PROTECTION, *supra* note 4, at 306.

22. Decision of the Council on Protection of the Environment by Control of Polychlorinated Biphenyls adopted on 13 February, 1973 C(73)1 (Final), *reprinted in* 27 INTERNATIONAL PROTECTION, *supra* note 4, at 8739.

23. Recommendation of the Council on Measures to Reduce All Manmade Emissions of Mercury to the Environment adopted on 18 September 1973, C (73) 172 (Final), *reprinted in* 27 INTERNATIONAL PROTECTION, *supra* note 4, at 8755.

24. European Agreement on the Restriction of the Use of Certain Detergents in Washing and Cleaning Products, Sept. 16, 1968, *reprinted in* 3 INT'L ENV'T'L. L., *supra* note 3, at 968:69. On November 22, 1973 a Directive was issued by the Council of the European Communities concerning

European Convention for the protection of international watercourses against pollution, but the draft completed in 1974 has not been adopted by the main organ, the Committee of Ministers.²⁵ A new draft has been prepared²⁶ and there is hope that it will be approved.

In a still narrower geographic framework, that of the European Economic Community (EEC), which includes only ten member states, a rather developed legislation on water pollution has been adopted. However, one of the river states of the Rhine, Switzerland, is not a member of the EEC. Moreover, some major problems concerning the Rhine, such as pollution by chlorides, thermal pollution, or even the problem of sewage water, are not directly covered by the Community rules. The rules are based primarily on a quality standard approach, according to the use of water, and state the quality required of surface water intended for the abstraction of drinking water,²⁷ of water intended for human consumption,²⁸ and of water for bathing.²⁹ Some of the Community rules, however, are of immediate concern insofar as they tend to limit discharges into the water, such as a Council Directive on limit values and quality objectives for mercury discharges by the chlor-alkali electrolysis industry,³⁰ the scope of which is, of course, rather limited.

The Council Directive of 4 May 1976 on Pollution Caused by Certain Dangerous Substances Discharged into the Aquatic Environment of the Community covers all surface waters,³¹ but is particularly applicable to discharges by river states into international watercourses, such as the Rhine. Like several other international instruments concerning water pollution control, the Directive established two lists of substances and groups of substances which were selected on the basis of their toxicity, persistence, and bioaccumulation. The most dangerous substances are included in List I, called the "black list." The "black list" includes organohalogen compounds, organophosphorus compounds, carcinogenic substances, mercury and its compounds, cadmium and its compounds, persistent mineral oils, and hydrocarbons of petroleum origin. Member states are to take appropriate steps to eliminate pollution of the waters by such substances. All discharges into the water which may contain any such substance must be submitted for prior authorization by the competent

the same field. According to art. 2 of this Directive, Member States shall prohibit the placing on the market and use of detergents in which the average level of biodegradability of the anionic, cationic, nonionic and ampholytic surfactants contained therein is less than 90%. 16 O.J. EUR. COMM. (No. L 347). 51 (1973).

25. Reply of the Comm. of Ministers, Council of Europe, Doc. 3417.

26. Report of the Activities of the Council of Europe, 20th Sess. 105 (1978).

27. EEC Council Directive of June 16, 1975, 18 O.J. EUR. COMM. (No. L 194) 26 (1975).

28. EEC Council Directive of July 15, 1980, 23 O.J. EUR. COMM. (No. L 229) 11 (1980).

29. EEC Council Directive of December 8, 1976, 19 O.J. EUR. COMM. (No. L 31) 5.02 (1976).

30. 25 O. J. EUR. COMM. (No. L 81) 27.03 (1982).

31. 19 O.J. EUR. COMM. (No. L 129) 18.5 (1976).

authority of the affected member state. Such discharge authorizations may be granted for a limited period only and will set the emission standards. The Council of the EEC will establish the limit values which the emission standards may not exceed, mainly on the basis of toxicity, persistence, and bioaccumulation.

List II, called the "grey list" contains substances which have a deleterious effect on the aquatic environment. The "grey list" includes zinc, copper, nickel, chromium, and other metals and their compounds; biocides not appearing in List I; substances which have a deleterious effect on the taste and/or the smell of the products; and toxic or persistent organic compounds of silicon. In order to reduce pollution of the waters by these substances, member states are to establish pollution reduction programs with deadlines. Discharges of substances on the "grey list" also require prior authorization. The authorization decision involves emission standards set locally or nationally, based on water quality objectives.

In reality, progress with the 1976 Directive has been slow. One reason for the sluggishness may be found in the nature of a directive. A Community Directive is binding upon the member states only as to the result to be achieved. National authorities, however, are responsible for selecting the forms and methods to achieve that result.³² Conflicts arise about the determination of limit values. Out of an original list of about 1500 "black list" substances, the Commission selected only 129 for attention. Limit values and quality objectives, moreover, have been agreed upon for only two of these, mercury and cadmium. At the same time, very little is known about the national pollution reduction programs for the "grey list" substances, but it seems that very few pollution reduction programs have been established by the member states. A theoretical discussion lies at the root of these difficulties. The United Kingdom argues that the approach should be based on the quality objectives which are consistent with the other Community Directives. On the other hand, the argument for the limit values used by the EEC Commission and the other member states is that the limit values, rather than the quality objectives, represent an efficient way of dealing with these substances and, moreover, avoids the costly implementation of monitoring systems and apportioning permitted pollution loads between countries. Moreover, the limit value approach also imposes equal cost burdens on sectors of industry wherever they are located.³³

As a matter of fact, the Directive of 4 May 1976 was influenced by a prior treaty to which several member states of the EEC, which are at the

32. Treaty Establishing the European Economic Community, March 25, 1957, art. 189, 298 U.N.T.S. 3.

33. Haigh, *Introductory Report in ROUND TABLE ON TEN YEARS OF WATER PROTECTION IN THE EUROPEAN COMMUNITY* 3 (September 30, 1983).

same time river states of the Rhine, are contracting parties: the Convention for the Prevention of Marine Pollution from Land-Based Sources, signed at Paris on June 11, 1974.³⁴ This instrument applies to a maritime area which covers the northeastern part of the Atlantic Ocean and of the Arctic Ocean. Because a large part of the pollution from land-based sources originates mainly from watercourses, the Treaty naturally addresses pollution carried by watercourses into the concerned maritime area, *inter alia* by the Rhine. According to the Paris Convention, the contracting parties shall individually and jointly adopt measures to combat marine pollution from land-based sources. The parties undertake to eliminate, as a matter of urgency, pollution by the substances included in a "black list," Annex A, part I of the Convention. These substances are very much the same as the corresponding list of the 1976 EEC Directive. Pollution from land-based sources by substances listed in the second part of the same annex is also strictly limited. In order to realize this obligation, the contracting parties are to implement programs and measures as well as an authorization system prior to discharges of such substances. Once again, a strong parallel exists between the substances of the "grey list" of the Paris Convention and those of the 1976 EEC Directive.

The Paris Convention is, at present, to be applied by three river states of the Rhine, although it is not binding on Switzerland or Luxembourg. However, the convention was also entered into force for the European Communities which are contracting parties to it,³⁵ so that Luxembourg—which is not a river state geographically, but whose situation in the Rhine river basin is important—is covered by the convention.

SPECIFIC INTERNATIONAL REGULATIONS RELATING TO THE RHINE

Inside the rather complex maze of regional regulations, rules concerning pollution control have been edicted by two intergovernmental organizations. These organizations have been expressly organized to foster international cooperation concerning the Rhine³⁶ and include the Central

34. Convention for the Prevention of Marine Pollution from Land-Based Sources, June 4, 1974, reprinted in 4 INT'L ENV'T'L. L., *supra* note 3, at 974:43. This Convention entered into force for the Federal Republic of Germany on April 1, 1982, France on May 6, 1978, and the Netherlands on May 6, 1978, but has not yet entered into force for Luxembourg which, however, was one of the original signatory states. Other river states, i.e., Austria and Switzerland, did not sign it. The preamble of the EEC Directive of May 4, 1976, stresses the importance of coordinating the implementation of several conventions designed to protect international watercourses from pollution and explicitly mentions "inter alia" the 1974 Paris Convention. See *supra* note 31.

35. 4 INT'L ENV'T'L. L., *supra* note 3, at 974:43/1. See also the EEC Council decisions of March 3, 1975 concluding the Convention for the Prevention of Marine Pollution from Landbased Sources, 18 O.J. EUR. COMM. (No. L. 194) 26 (1975).

36. See Convention and Protocol Respecting the Navigation of the Rhine, Oct. 17, 1868, reprinted in 138 CONSOLIDATED TREATY SERIES 167. This Convention, popularly referred to as the Mannheim Convention, was modified by the Treaty of Versailles of June 28, 1919 and the Convention of Dec. 14, 1922 and Nov. 20, 1963 with attendant Protocols.

Commission for the Navigation of the Rhine and the International Commission for the Protection of the Rhine Against Pollution.³⁷ The common characteristic of these rules is that their geographic scope does not encompass the Rhine as a whole, but only determined parts of the river. The Mannheim Convention on the Navigation of the Rhine of 17 October 1968³⁸ concerns only the section between Basel and the open sea, i.e. the navigable waterway; while the Berne Agreement of 29 April 1963, concerning the International Commission for the Protection of the Rhine Against Pollution, provides for collaboration in the protection of the waters of the Rhine below the lower Lake of Constance. Neither the Mannheim Convention, nor the Berne Agreement, takes into account the whole basin of the Rhine. While this omission is understandable for the first convention, which is essentially related to navigation, it is much more criticizable for the second. A certain number of other international treaties, however, have been provided for the protection of surface waters against pollution in the catchment area of the Rhine. Most of these treaties establish specific international commissions to ensure cooperation among the concerned States.³⁹

The Central Commission for the Navigation of the Rhine

The Central Commission for the Navigation of the Rhine was organized in 1815 with the objective of ensuring freedom of navigation on the river and equal treatment for all ships. The Commission was the first international organization in history, and was given amazingly broad powers. One of the Commission's most essential activities is to formulate mandatory regulations for the navigation of the Rhine. Violations of such regulations are punishable directly by tribunals expressly designed to act as Rhine Navigation Tribunals.

Some of the Rhine navigational regulations include pollution control provisions. Article 1.15 of the Police Rules prohibits the discharge of any material or substance which would create a danger or hindrance for navigation or for other users.⁴⁰ The discharge of hydrocarbons, used oil, chemicals, and garbage originating from ships is prohibited. As a consequence, installations to receive such materials have been created in the

37. *Supra* note 7.

38. *Supra* note 36.

39. Agreement on the Protection of Lake Constance against Pollution, Oct. 27, 1960, *reprinted in* 2 INT'L ENV'T'L. L., *supra* note 3, at 960:69; Protocol Concerning the Constitution of an International Commission for the Protection of the Mosel Against Pollution, Dec. 20, 1961, *reprinted in* 2 INT'L ENV'T'L. L., *supra* note 3, at 961:94; Protocol to Establish a Tripartite Standing Committee on Polluted Waters, Belgium-France-Luxembourg, April 8, 1950, 66 U.N.T.S. 285, *reprinted in* 1 INT'L ENV'T'L. L., *supra* note 3, at 950:27.

40. Articles Concerning the Navigation of the Rhine, Mar. 24, 1815, *reprinted in* 64 CONSOLIDATED TREATY SERIES 16. *See also id.*, art. 7.

main river ports. The Commission also was required to examine the discharge of warm water by a nuclear power plant sited in Germany.⁴¹ Other rules prohibit the transport of some dangerous substances, and subject the transport of other substances to conditions determined in detailed prescriptions.

The International Commission for the Protection of the Rhine Against Pollution

The International Commission for the Protection of the Rhine Against Pollution was created by an agreement signed at Berne on April 29, 1963, by four riparian states: the Federal Republic of Germany, France, the Netherlands, and Switzerland, and by Luxembourg, which is near the Rhine.⁴² The old treaty of 1885 regulating the salmon fishery in the river is the origin of this agreement.⁴³ Questions concerning pollution have been handled in the framework of that old treaty since 1950. The 1963 Berne Agreement is exclusively institutional, insofar as it contains no specific obligation for the contracting states outside of their agreement to cooperate in the Commission. The task of the Commission is to prepare and carry out all necessary research to determine the nature, importance, and origin of pollution of the Rhine. The Commission applies the results of such research and proposes to the contracting parties measures capable of protecting the Rhine against pollution. The Commission also prepares the basis of possible arrangements between the parties for protection of the waters of the Rhine. Each contracting party is represented in the Commission by four delegates at most, who may be assisted by experts. The Commission meets in ordinary session once a year, but extraordinary sessions can be convened. The voting rule is unanimity, but the abstention of one single delegation does not prevent a resolution. The Commission can establish working groups composed of delegates or experts appointed by each delegation, and may also utilize the services of competent persons or organizations in order to examine special questions. The Commission must furnish to the member states an annual report of its activity including, in particular, the results of its research and analyses. The Commission collaborates with other international commissions created for the Rhine and the river's estuaries, and may cooperate with other organizations entrusted with the protection of waters. Commission headquarters are located in Koblenz, Germany.

41. Protocol 27 of the 1976 Spring Session of the Central Commission for the Navigation of the Rhine.

42. See *supra* note 7 where, however, no English text of the Agreement is published. An English translation appears in PEASLEE, INTERNATIONAL GOVERNMENTAL ORGANIZATION, 430 (Part IV, Communication, Transfert, Travel).

43. *Supra* note 3.

In 1976, the European Economic Community adhered to the Berne agreement and became the fifth member of the Commission. Accordingly the Agreement has been amended, particularly as far as voting procedures are concerned.⁴⁴ In areas coming within its jurisdiction, the EEC has the number of votes corresponding to the number of its member states which are contracting parties to the Agreement, i.e., all of them with the exception of Switzerland. The EEC does not vote in cases where its member states vote and vice versa.⁴⁵

The task of the Koblenz Commission clearly is to monitor the pollution of the Rhine, without having the power to make any decisions. Consequently, the pollution of the river increased constantly during the years which followed the creation of the Commission, but international organizations such as the Koblenz Commission, invested with purely technical attributes, could not deal with this evolution. Hence, ministers of the states which are contracting parties to the Berne agreement met October 25–26, 1972 at The Hague. Problems raised by the pollution of the Rhine, therefore, were transferred from the technical to a political level. The international Commission, moreover, had to continue to fulfill its original task and had been given a mandate to prepare international conventions on specific pollution problems. The Commission was also required to prepare a long-term program of activities.

The program of activities was presented to the fourth meeting of the Ministers, held in Berne on May 25, 1976. The program contained a description of the hydrological character and current quality of the waters of the Rhine, as well as data concerning active and foreseeable sources of pollution. The last part of the program is a plan of action for the Commission and outlines future activities in some principal fields including pollution by sewage waters, radioactive substances, chemicals, chlorides, ships, thermal pollution, and emergency warning systems.⁴⁶ Although international obligations have been created and entered into force in only two of these fields, sewage waters and ships, concrete international, as well as national, actions have led to a general improvement of the water quality of the Rhine. In particular, the oxygen content of the water has increased.⁴⁷ Riparian cities have also considerably improved their sewage water purification systems.

44. Additional Agreement to the Agreement Signed in Berne on April 29, 1963 Concerning the International Commission for the Protection of the Rhine Against Pollution, art. 2, Dec. 3, 1976, 20 O.J. EUR. COMM. (No. L 240) 88 (1977), reprinted in 4 INT'L ENV'T'L. L., *supra* note 3, at 976:91.

45. *Id.*

46. COMMISSION INTERNATIONALE POUR LA PROTECTION DU RHIN CONTRE LA POLLUTION, PROGRAMME DE TRAVAIL A LONG TERME, COBLENCE.

47. COMMISSION INTERNATIONALE POUR LA PROTECTION DU RHIN CONTRE LA POLLUTION, RAPPORT D'ACTIVITE, 27 (1981).

Thermal Pollution

While the Commission has taken concrete measures in other fields, research and preparatory studies are still continuing in the field of thermal pollution. Thermal pollution is the warming of the waters of the Rhine and results from the use of the water in cooling systems. Warming of the river has considerable effect on certain pollutants in the water, as well as on meteorological conditions in the proximity of the river. In the early 1970s thermal pollution was considered to be a major problem of the near future. The water of the Rhine was to be used for the cooling systems of about 15 nuclear power plants.⁴⁸ Most of these nuclear power projects have been abandoned but studies on thermal pollution continue. The studies are particularly complex because a number of parameters, such as the flow of the river, meteorological data, and the discharge of warm water by different users, must be considered. A mathematical model has now been established. The next step is to determine the type of convention which is to be drafted to deal with thermal pollution. Members of the Commission, moreover, must reach an agreement on the main provisions of the future convention.⁴⁹ Until a convention can be adopted, and in order to prevent deterioration of the situation, a declaration providing for a moratorium on thermal pollution was adopted by ministers participating in various meetings in and before 1976. According to that declaration, their governments shall inform each other of projects which might cause thermal pollution of the Rhine.

The Commission has agreed that nuclear power plants should use closed cooling systems in the future.⁵⁰ This view, however, seems to have been modified because it is no longer foreseen that such plants should use closed cooling systems exclusively.⁵¹ Even though the text of the declaration has been officially transmitted to the governments of member states, the declaration has not been approved by all of them;⁵² however, in fact, thermal pollution of the Rhine has not increased in the interim.⁵³

Warning and Alarm System in Emergencies

Both conventions drafted in the framework of the International Commission and signed at Bonn, on December 3, 1976, provide for an in-

48. See Lammers, *New International Legal Developments Concerning the Pollution of the Rhine*, NETHERLANDS INTL L. REV. 175 (1980).

49. COMMISSION INTERNATIONALE POUR LA PROTECTION DU RHIN CONTRE LA POLLUTION, RAPPORT D'ACTIVITE 23 (1981).

50. COMMISSION INTERNATIONALE POUR LA PROTECTION DU RHIN CONTRE LA POLLUTION, RAPPORT D'ACTIVITE 49 (1979).

51. COMMISSION INTERNATIONALE POUR LA PROTECTION DU RHIN CONTRE LA POLLUTION, RAPPORT D'ACTIVITE 23 (1980).

52. *Supra* note 49.

53. *Id.*

ternational warning and alarm system.⁵⁴ According to Art. 11 of the Convention on the Protection of the Rhine Against Pollution by Chlorides:

When a Contracting Party notes sudden and sizeable increase in chloride ions in the waters of the Rhine or has knowledge of an accident that may seriously endanger the quality of those waters, it will report it without delay to the International Commission and to the contracting Parties likely to be affected, according to a procedure to be established by the International Commission.⁵⁵

Similarly, Article 11 of the Convention for the Protection of the Rhine against Chemical Pollution provides that:

If a Government which is a Party to this Commission detects a sudden considerable increase in annex I or II substances, or learns of an accident which could seriously threaten the quality of Rhine waters, it shall inform the International Commission and the Contracting Parties which could be affected without delay and in accordance with a procedure to be worked out by the International Commission.⁵⁶

In implementing these prescriptions, the Commission had first to examine the existing warning and alarm systems in the catchment area of the Rhine, whether national or bilateral. The Commission decided to extend its investigation to incidents in larger areas,⁵⁷ and found that because such incidents were primarily caused by accidents, its attention must be focused on pollution caused by accidents. As a result, a temporary warning and alarm system has been established through the cooperation of the international Commissions for the Sarre and for the Moselle. This system was to be applied beginning January 1, 1980, but it had to be tested first.⁵⁸

A first test of the warning and alarm system took place in February 1980 by the simulation of an accident in Waldshut, up-stream from Basel. Test results indicated that the system was functional, but needed improvement. Accordingly, the entire system has been rebuilt.⁵⁹ The new

54. It may be recalled here that the obligation of warning in emergencies is one of the emerging principles of international environmental law, especially as far as transfrontier pollution and shared natural resources are concerned. See, in particular, principle 9 of the OECD; Principles concerning Transfrontier Pollution, *supra* note 14; Principle 9 of the Principles of Conduct in the Field of the Environment Concerning the Conservation and Harmonious Utilization of Natural Resources Shared by Two or More States, *supra* note 15.

55. For the English text of this Convention, see I.L.M. 265 (1977).

56. Convention for the Protection of the Rhine Against Chemical Pollution, Dec. 3, 1976, 20 O.J. EUR. COMM. (No. L 240) 76 (1977), reprinted in 4 INT'L ENV'T'L L., *supra* note 3, at 976:90. See *infra*, notes 62-78 and accompanying text.

57. COMMISSION INTERNATIONALE POUR LA PROTECTION DU RHIN CONTRE DE POLLUTION, RAPPORT D'ACTIVITE 37 (1978).

58. COMMISSION INTERNATIONALE POUR LA PROTECTION DU RHIN CONTRE DE POLLUTION, RAPPORT D'ACTIVITE 35-37 (1979).

59. COMMISSION INTERNATIONALE POUR LA PROTECTION DU RHIN CONTRE DE POLLUTION, RAPPORT D'ACTIVITE 35 (1980).

warning system became operable in 1982, and consists of a network of six main warning centers on the Rhine and two others on the Moselle. Local and regional authorities forward information to those centers and the transmission of messages by the warning centers follows, in principle, the direction of the flow of the Rhine. The two centers on the Moselle are to transmit warnings only if there is a danger that an accident will have a significant effect on the Rhine. The end of the alarm has to be notified by the same channels. A model form for these warnings has also been set up by the Commission.⁶⁰

Chemical Pollution

The investigations and studies done by the International Commission revealed that the major part of the pollution of the Rhine originated from large cities and from chemical industrial plants and paper mills.⁶¹ Hence, one of the main tasks which the meetings of ministers entrusted to the Commission was to draft a convention on the chemical pollution of the Rhine. The Convention, the official title of which is "Convention for the Protection of the Rhine Against Chemical Pollution," was signed at Bonn on December 3, 1976 by the riparian states, Luxembourg, and the EEC as a newly-admitted member of the Commission.⁶² This instrument was strongly inspired by the draft European Convention for the Protection of International Watercourses Against Pollution (which had never been adopted by the member states of the Council of Europe), the 1974 Paris Convention for the Prevention of Marine Pollution from Land-Based Sources,⁶³ and the EEC Directive on Pollution Caused by Certain Dangerous Substances Discharged into the Aquatic Environment of the Community.⁶⁴ The preamble of the Rhine Convention on Chemical Pollution makes an explicit reference to the EEC Directive.

The preamble of the Rhine Convention on Chemical Pollution also stresses that action against the pollution of the Rhine must be a global one; the protection against chemicals must be in conjunction with other efforts to conclude agreements against pollution by chlorides and thermal pollution. It must be recognized that this treaty is only one of the continuous and coherent measures which must be taken to protect fresh water and sea water from pollution.

The definition of the objectives of the Convention is the same as that outlined in article 17 of the stillborn European Convention For the Pro-

60. COMMISSION INTERNATIONALE POUR LA PROTECTION DU RHIN CONTRE DE POLLUTION, RAPPORT D'ACTIVITE 41, 93 (1981).

61. COMMISSION INTERNATIONALE POUR LA PROTECTION DU RHIN CONTRE DE POLLUTION, RAPPORT D'ACTIVITE 23 (1977).

62. *Supra* note 56.

63. *Supra* note 34.

64. *Supra* note 31.

tection of International Watercourses Against Pollution. These objectives represent a global approach and include the protection of marine environment against land-based pollution. The contracting parties must consider that Rhine water is used for the production of drinking water for human consumption, for consumption by domestic and wild animals, for the conservation and development of the natural species of flora and fauna, and the conservation of the self-purifying capacity of water. Additionally, the waters of the Rhine are used for fishing, recreation, a supply of fresh water to agricultural lands, and industrial purposes.⁶⁵

The system of protection provided for by the Convention is essentially the same as in the EEC Directive of May 4, 1976. A basic distinction is made between two categories of chemicals. The dangerous substances appearing in Annex I ("black list") shall be eliminated from the waters of the Rhine but the elimination of discharges of these substances will be gradual, limited by the results of ongoing investigations and the available technology.⁶⁶

Any discharge into the surface waters of the Rhine basin must be submitted for prior authorization by the responsible authorities of the government concerned. The authorization will determine emission standards which establish the maximum permissible concentration and the maximum permissible quantity of a substance discharged during one or more specific periods. The emission standards, however, may not exceed the limit values laid down by the International Commission. These limit values are fixed in terms comparable with methods of establishment of emission standards, on the basis of the substance's toxicity, persistence and capacity of bioaccumulation, and taking into account the best available technology.⁶⁷ The establishment of limit values by the International Commission follows the procedure used to amend the Convention: the Commission makes recommendations which enter into force following unanimous acceptance by the Contracting Parties.⁶⁸ The same procedure is to be applied to time limits which national authorizations establish for discharges containing Annex I substances. These time limits cannot exceed those recommended by the Commission and accepted by the contracting parties.⁶⁹

Annex II, the "grey list," lists the substances likely to affect the quality of Rhine water and which must be regulated by national authorities with a view to strictly limit their discharge. Any discharge which may contain such substances listed in Annex II is submitted for prior authorization

65. *Supra* note 56, art. 1(2).

66. *Id.* art. 1(1).

67. *Id.* art. 5(2)(b).

68. *Id.* art. 14.

69. *Id.* art. 3(3).

which establishes the emission standards fixed in accordance with national quality objectives.⁷⁰

The government parties to the Convention must establish, within a period of two years from their entry into force, national programs for the reduction of pollution by such substances,⁷¹ after having conferred with the International Commission. The Commission must submit to the governments common goals in reducing pollution of the Rhine.⁷² National programs are to provide deadlines for implementation of the goals.⁷³

Several provisions concern both Annex I and Annex II lists of substances. Measures must be taken to ensure that the storage and deposit of Annex I and II substances entail no danger of pollution to the Rhine. Discharges must be monitored in accordance with the Convention, and the International Commission shall be informed annually of the experience gained.⁷⁴ Each concerned government is responsible to install and operate measuring systems and to regularly inform the International Commission of the results of its monitoring.⁷⁵ Implementation of the measures taken pursuant to the Convention shall in no case result in a direct or indirect increase in the pollution of the Rhine.⁷⁶

Another provision concerning all the substances listed in both Annexes is Article Two of the Convention. According to this article the governments shall establish, for their own use, a national inventory of discharges, points of discharge, and substances discharged into the surface waters of the Rhine basin. While such inventories are mandatory for the substances appearing on the "black list," the inclusion of various substances falling under the Annex II "grey list" may be proposed by the International Commission.⁷⁷ The contents of the national inventories which must be communicated to the International Commission, however, include *only the total quantities of each of the various substances* discharged into the waters of the Rhine basin between the measuring points. This provision reflects the fear of industrialists that information on individual discharges could give competitors insight into their methods of production.

The Convention for the Protection of the Rhine Against Chemical Pollution also includes an annex on dispute settlement. Arbitration, in rather classical terms, is the only means provided for in the Annex. Nevertheless, two details may be stressed. First, if necessary, the European Court of Human Rights will designate the chairman of the arbitral

70. *Id.* art. 6(4), (5).

71. *Id.* art. 1(1)(b), art 6(2).

72. *Id.* art. 6(3).

73. *Id.* art. 6(7).

74. *Id.* art. 8(2).

75. *Id.* art. 9.

76. *Id.* art. 9.

77. *Id.* art. 2(3) and Annex II.

tribunal. Second, as a consequence of the participation of the EEC in this Convention, in disputes between Switzerland (the only party to the Convention which is not a Member State of EEC) and any other contracting parties, a Swiss request should be transmitted simultaneously to the concerned state and the EEC. The state and the EEC are then to inform Switzerland whether the concerned state, the EEC, or both are to be considered as parties to the dispute.⁷⁸

The Convention entered into force on February 1, 1979. Implementation, however, has not been easy. Although substances listed in Annex I are very much the same as those included in the "black list" of the 1976 EEC Directive, the International Rhine Commission has to select those substances among the 1500 listed which are to be eliminated first. In 1977 the Commission considered that ecotoxicological data existed only for about 150 of these substances.⁷⁹ However, a first list of eighty-three substances falling within the scope of the "black list" has been drafted and the International Commission considered that seventeen of them should be dealt with in priority.⁸⁰ First, mercury and cadmium are to be eliminated, and in 1979 the Commission adopted a recommendation fixing limit values for the discharge of mercury by certain industries.⁸¹ This recommendation has not been approved by all members, however, and thus has not entered into force.⁸² But pollution by mercury in the Rhine has diminished during these last years. Generally, there is a trend toward improvement in the level of chemical pollution in the Rhine. The mere existence of an international convention may have an impact on the behavior of states.

From a theoretical point of view, the Convention on Chemical Pollution enlarged the geographical scope of the original 1963 convention, which created the International Commission. The concept of the Rhine basin appears several times in the Rhine Convention on Chemical Pollution: (1) the establishment of controlled discharge into the surface waters of *the Rhine basin*,⁸³ (2) the elimination of pollution by Annex I substances of the surface waters of *the Rhine basin*,⁸⁴ and (3) obligation to submit to prior authorization any discharge of such substances into the surface

78. *Id.* art. 2(1). See Annex B to the Convention for the entire provisions on arbitration.

79. COMMISSION INTERNATIONALE POUR LA PROTECTION DU RHIN CONTRE LA POLLUTION, RAPPORT D'ACTIVITE 11 (1977).

80. COMMISSION INTERNATIONALE POUR LA PROTECTION DU RHIN CONTRE LA POLLUTION, RAPPORT D'ACTIVITE 13 (1981).

81. COMMISSION INTERNATIONALE POUR LA PROTECTION DU RHIN CONTRE LA POLLUTION, RAPPORT D'ACTIVITE 13-15, 45 (1979).

82. COMMISSION INTERNATIONALE POUR LA PROTECTION DU RHIN CONTRE LA POLLUTION, RAPPORT D'ACTIVITE 13 (1981).

83. *Supra* note 56, art. 1.

84. *Id.* art. 1(1)(a).

waters of the Rhine basin.⁸⁵ In fact, the presence of Luxembourg in the International Commission and the cooperation with the international Moselle and Sarre Commissions have been the first steps in the same direction. A 1977 inventory by the International Rhine Commission of the production and treatment of sewage waters in the Rhine basin shows a constant effort⁸⁶ to realize the real dimensions of the problem of the pollution of the Rhine—the control of pollution throughout *the whole river basin*.

Pollution by Chlorides

The most dramatic aspect of the pollution of the Rhine is its pollution by common salt (NaCl). Chloride pollution is causing one of the main environmental problems in the estuary state, the Netherlands. As a consequence of reclamation of agricultural land (the “polders”), a certain degree of salination by seawater seepage is of ancient occurrence. With present technical knowledge, the seepage cannot be eliminated at an acceptable cost; hence, fresh water from the Rhine system is used to reduce the consequences of the salt burden. The salination of the Rhine, however, reduces the effect of flushing the polder reservoirs in the western Netherlands. Additionally, salination of the river also means inferior quality of the water as a raw material for the public water supply, which, in turn, leads to measures of compensation in preparing drinking water. The Netherlands, moreover, complains of the financial damage caused to its agriculture and to its economy in general.⁸⁷

The salination of the Rhine is relatively new, resulting from growing industrial and mining activities. In 1885, the chloride concentration amounted to approximately 20 milligrams per liter, or 40 kilograms per stere (kg/s).⁸⁸ Since 1950 the chloride load has increased rapidly to an average of 300 kg/s and, in the spring of 1977, peak values of 835 kg/s were measured. A considerable proportion of the salt, about thirty to thirty-five percent, is discharged by potassium mines in Alsace, France. These mines have been producing potassium since the beginning of the century from minerals occurring in the subsoil, i.e. sylvanite, a mixture of potassium chloride (KCl) and sodium chloride (NaCl). In factories this mixture is separated, and the potassium used as an agricultural fertilizer. The sodium chloride, however, is considered a waste because there is no market for it in Western Europe. Initially, salt was dumped in salt-tips

85. *Id.* art. 3(1).

86. COMMISSION INTERNATIONALE POUR LA PROTECTION DU RHIN CONTRE LA POLLUTION, RAPPORT D'ACTIVITE 25 (1979).

87. Hueting, *Some Economic Aspects of Pollution of the Rhine*, in RHINE POLLUTION II-13 (1978).

88. A stere is a unit of volume equal to one cubic meter. THE AMERICA HERITAGE DICTIONARY 1194 (2d College ed. 1982).

around the mines, but because no impervious dividing layer was placed under the tips, the salt leached into the subsoil and polluted the underground water, one of the major natural resources of the area. Therefore, beginning in 1932, the salt, dissolved in water, was discharged into the Rhine. For several decades measures were taken to distribute the salt load in such a way that peak loads were avoided as much as possible, but in 1976 this was discontinued.⁸⁹

One of the main tasks of the International Commission for the Protection of the Rhine Against Pollution was to solve this problem of chloride pollution. First considered was the possibility of stocking a part of the salt on the soil in selected sites. This would mean that the problem of an impervious storage ground could be solved. However, preliminary studies, financed by all the member states of the International Commission, did not lead to acceptable results.⁹⁰ Moreover, the cost of this solution would have been extremely high.⁹¹

An alternative solution was found and adopted in 1976. The French government was to install an injection system in the subsoil of Alsace, which meant that the injection would be into a layer of limestone called the "Great Oolite" at a depth of 1500 to 2000 meters. An international convention on the Protection of the Rhine Against Pollution by Chlorides has thus been signed at Bonn, on December 3, 1976, at the same time as the Convention on Chemicals.⁹²

In its preamble the Convention recalled that, since 1972, the Conference of Ministers on the Pollution of the Rhine had adopted the objective of progressively improving the quality of the waters of the Rhine. One of the aims of the Conference was to limit the chloride ion concentration at the German-Netherlands border to 200 mg/l. Former values of the chloride ion concentration had been considerably higher.⁹³

The Convention provides for two kinds of measures. First, the contracting parties are to implement within their territories necessary measures to prevent an increase in the amount of chloride ions discharged into the Rhine basin.⁹⁴ The national concentration figures which represent the values taken into account as a basic are included in an annex to the Convention.⁹⁵ Any increase in the amounts of chloride ions from isolated

89. Van der Veen, *supra* note 1, at 43-47.

90. Kiss & Lambrechts, *La lutte contre la pollution de l'eau en Europe occidentale*, in *ANNUAIRE FRANCAIS DE DROIT INTERNATIONAL*, 730 (1969).

91. COMMISSION INTERNATIONALE POUR LA PROTECTION DU RHIN CONTRE LA POLLUTION, *RAPPORT D'ACTIVITE* 58 (1972-1974).

92. Convention on the Protection of the Rhine Against Pollution by Chlorides, Dec. 3, 1976, art. 2(1), *reprinted in* 16 I.L.M. 265 (1977).

93. COMMISSION INTERNATIONALE POUR LA PROTECTION DU RHIN CONTRE LA POLLUTION, *PROGRAMME DE TRAVAIL A LONG TERME, VERSION GLOBALE*, t.I. at 94-95.

94. *Supra* note 92, art. 3.

discharges is admissible only to the extent that the concerned contracting parties offset such concentration in their respective territories or if a general method of offsetting it is found within the framework of the International Commission. A contracting state, however, may authorize an increase in chloride concentration without immediately offsetting it, in exceptional cases, for imperative reasons, and after having requested the opinion of the International Commission. In order to ensure the implementation of the general obligation not to increase pollution by chloride ions, the Rhine states are to control all discharges greater than 1 kg/s in the basin of the Rhine in their territories. Each contracting party is to send an annual report to the International Commission. When the International Commission ascertains that at one of the measuring points the load and concentration of chloride ions shows a continuing tendency to increase, it shall request each contracting party in whose territory the cause of this increase is located to take the necessary steps to halt it.⁹⁶ Within four years of the entry into force of the Convention, the International Commission is to make proposals concerning the means to achieve progressively a new chloride-ion concentration limitation over the entire course of the Rhine.⁹⁷

The other category of measures is aimed to gradually reduce existing pollution emanating from the potassium mines in Alsace.⁹⁸ The general objective is to reduce the discharge of chloride ions into the Rhine by at least 60 kg/s as an annual average. The French government expects to install an injection system in the subsoil of Alsace in order to reduce, over a period of ten years, the discharges from the Alsace potassium mines by an initial quantity of 20 kg/s of chloride ions, under the technical conditions described in Annex I of the Convention.⁹⁹ The installation includes a concentrated brine manufacturing plant; watertight storage basins for concentrated brine and the waste water extracted; and a network of pipes to conduct the waste material from the basin to the injection wells, over a distance of approximately 10 kilometers. The injection wells are equipped with two systems, the first of which is a system permitting the injection of brine either by simple gravity or by means of a pump, and the second a system to convey waste water from the wells, i.e. water which has been replaced in the reception layer by concentrated brine.¹⁰⁰ After consideration of the results obtained during an initial stage, the

95. *Id.* Annex II.

96. *Id.* art. 9.

97. *Id.* art. 6.

98. *Id.* art. 2(1).

99. *Id.* art. 2(2).

100. *Id.* Annex I.

French government is to take all steps necessary to achieve the general objective which is the reduction of the discharge by at least 60 kg/s of chloride ions.¹⁰¹

The installation of the injection system is only a partial solution, because it will reduce the discharge of chloride ions into the Rhine by only approximately twenty percent. The estimated cost of the system is approximately 132 million French francs, to which three contracting parties were to contribute in the following prorata: the Netherlands, thirty-four percent; Germany, thirty percent; Switzerland, six percent; with the remaining thirty percent being at the charge of France. Further measures and reductions were to be financed according to the same prorata.¹⁰² It is an ironic observation that, although an up-river state agreed to contribute to the cost of the operation, it is the victim state that pays the largest contribution.

The Convention also contains special provisions concerning the solution of difficulties arising from its application. If the International Commission ascertains that the load and concentration of chloride ions at one of the measuring points show a continuing tendency to increase, it shall request the concerned state to take the necessary steps to halt it.¹⁰³ If a period of six months has passed since such increase has been noted by the International Commission, the latter may call upon the services of an independent expert at the request of a contracting party.¹⁰⁴ The Convention, however, also contains a general clause for the settlement of disputes: disputes which cannot be settled by negotiation are to be submitted to arbitration at the request of one of the parties, unless they decide otherwise.¹⁰⁵ An annex to the Convention establishes the rules for the composition of the arbitral tribunal and for its procedure. These provisions are essentially the same as those of the Convention on Chemicals but, of course, they do not mention the participation of the EEC, because the EEC is not a contracting party to the Convention on Chlorides.

Here again, it may be stressed that the concept of river basin appears in various provisions: an increase in the amounts of chloride ions discharged into the *Rhine basin* is to be prevented.¹⁰⁶ Additionally, the contracting parties are to control all discharges of chloride ions greater than 1 kg/s in the basin of the Rhine within their territory.¹⁰⁷

This Convention had to be ratified, and ratification occurred in 1978 in Germany, Luxembourg, the Netherlands, and Switzerland. In France,

101. *Id.* art. 2(3).

102. *Id.* art. 7.

103. *Id.* art. 10.

104. *Id.* art. 9, 10(1).

105. *Id.* art. 12(3).

106. *Id.* art. 3(1).

107. *Id.* art. 3(4).

however, there was strong local opposition against the injection of chloride waste into the subsoil. Local French politicians argued that the salt water of the "Great Oolite" in which the brine coming from the potassium mines was to be injected, should be preserved from pollution, that the installations necessary for the injection would be a danger to the environment and, last but not least, that the waste salt should be considered a natural resource and should not be dumped. Ecological movements supported these views after some hesitation. As a consequence the French government, fearing that approval would be refused, decided in December 1979 not to submit the Convention to the legislature for approval.¹⁰⁸

The International Commission was forced to consider alternative solutions, which included the transport of waste salt by ships to the sea; the creation of an industry in the area of the potassium mines which could use the salt; and the transport of salt to such industries as already exist in Lorraine, several hundred kilometers from the mines.¹⁰⁹ All of these alternatives, however, were very expensive and have been abandoned.¹¹⁰

In the meantime, after the French elections in June 1981, a new government replaced the government of Mr. Barre. Having the support of the majority at the Assemblée Nationale, the Chloride Convention was submitted to the vote of the Assemblée Nationale and approved on October 7, 1983. The procedure of ratification was finished at the end of 1983. At the proposal of the French government, the deadlines foreseen for the different stages have been modified.¹¹¹ Nonetheless, the pollution of the Rhine by chlorides has continued and even increased during these interim years. The victims in the Netherlands have tried to stop the pollution by means other than internationally agreed rules or intergovernmental institutions.

REMEDIES OUTSIDE INTERNATIONAL REGULATIONS

At an international level, the dispute arising from the discharges of salt into the Rhine could have been settled by means which international law usually recommends to an intergovernmental dispute. The Dutch government, however, did not want to institute such proceedings. Governments generally try to avoid the settlement of environmental disputes by means other than negotiation. Individual victims and a Dutch foundation called "Stichting Reinwater" which was especially established in

108. Lammers, *supra* note 48.

109. COMMISSION INTERNATIONALE POUR LA PROTECTION DU RHIN CONTRE LA POLLUTION, RAPPORT D'ACTIVITE 21 (1980).

110. COMMISSION INTERNATIONALE POUR LA PROTECTION DU RHIN CONTRE LA POLLUTION, RAPPORT D'ACTIVITE 19-21 (1980).

111. This was done by an exchange of letters in April-May 1983, COMMISSION INTERNATIONALE POUR LA PROTECTION DU RHIN CONTRE LA POLLUTION, RAPPORT D'ACTIVITE 68 (1983).

the interest of cleaning up the Rhine, brought an action in October 1974 before the District Court of Rotterdam against the Alsatian Potassium Mines, alleging that this enterprise was the greatest single and most easily identifiable source of salinity in the Rhine. The plaintiffs asked for compensation for the damage caused especially to horticulturists.

First the district court had to establish its competence. Article 5 (3) of the Brussels Convention on Jurisdiction and Enforcement of Judgments in Civil and Commercial Matters of September 27, 1968, signed by the member states of the European Communities, provides that the Tribunal of the place where the damaging act took place has jurisdiction for civil actions. Interpreting this provision, the district court ruled that the "damaging act" was produced in France, so that the action of the Dutch plaintiffs had to be filed with a French tribunal.¹¹² On appeal, the Court of Appeals of the Hague decided to ask the Court of Justice of the EEC, which had been given competence to interpret the Brussels Convention, to determine the meaning of the provision.¹¹³ In an important decision the Court held, on November 30, 1976, that the terms used in Article 5 (3) of the Brussels Convention, "place where the damaging act has occurred" are to be understood as concerning at the same time the place where the damage is produced and the place of the act which is at the origin of the damage. Thus, the plaintiffs could bring the case either in a French or in a Dutch court.¹¹⁴ The case came back to the district court of Rotterdam. The plaintiffs, taking advantage of "forum shopping," chose their own national jurisdiction. That court rendered on January 8, 1979, an interim decision which includes some interesting elements concerning the general problem of transfrontier pollution.

Amazingly enough, the Rotterdam district court did not base its competence on the Brussels Convention as it was interpreted by the Court of the EEC. Instead, the court noted that writers on international law have recognized the jurisdiction of national courts in the state where the damage occurred. Concerning the question of what law was to be applied, the court chose to apply "the law governing in the Netherlands," which includes public international law under certain conditions within the Dutch legal order. Thus, norms of public international law were applied to a case of an international character occurring between private persons.

112. *Handelskwekerij G. J. Bier B. V. and Stichting Reinwater v. Mines de Potasse d'Alsace S.A.*, decision of May 12, 1975. The French translation of the text appears in *REVUE JURIDIQUE DE L'ENVIRONNEMENT* 71 (1976).

113. Protocol of Luxembourg signed on June 3, 1971.

114. Case 21/76, *Ste anonyme Handelskwekerij G. J. Bier B.V et Fondation Reinwater c. Ste anonyme Mines de Potasse d'Alsace*, *REVUE JURIDIQUE DE L'ENVIRONNEMENT*, 323 (1977). See Rest, *Wahl des zuständigen Gerichtes bei Distanzdelikten nach dem EG-Zuständigkeits und Vollstreckungsabereinkommen*, in *RECHT DER INTERNATIONALEN WIRTSCHAFT*, 669 (1977); Jessurun, d'Oliveira, *La pollution du Rhin et le droit international privé*, in *RHINE POLLUTION* 81 (1978).

The district court proceeded to examine principles of general international law. It noted the absence of any rule of customary international law which could directly or indirectly be applied to the case. The court decided to resort to the general principles of law recognized by civilized nations and/or to judicial decisions and teachings of writers. On the basis of the arbitral award given in the *Trail Smelter* case,¹¹⁵ the court concluded that the general principle of law "sic utere tuo ut alienum non laedas," which prohibits the abuse of rights, was applicable to both states and individual persons. Assuming that it had been established by clear and convincing evidence that damage was caused by the discharge of waste salts, the court held that the discharge of those salts was a violation of the general principle of law. Thus, the discharger of the salts was obliged to compensate for the damage resulting from the violation of a legal obligation.

The district court, however, was unable to decide whether the damage was really caused by the Alsace Potassium Mines (MDPA) and, if so, what was the measure of such damages. Further information was still needed on points such as the kind of plants or crops grown by the plaintiffs, the chloride content of the maximum water allocation, the origin of the water used, the possibility of taking measures to restrict the damage, and the amount of chlorides in the surface water resulting from the discharges of industrial wastes by the potassium mines. The parties were to give the required information and, later, in another interim judgement rendered on April 28, 1980, the district court appointed three experts to answer whether and, if so, to what extent, the discharge of waste salts by the MDPA contributed to the damage sustained by the horticulturists.

Interestingly, the MDPA asked the court to take into consideration the Convention on Chlorides, signed at Bonn on December 3, 1976. That Convention, however, had not entered into force at that date. Moreover, the court held that even after the Convention's entry into force, when the discharges of waste salt would take place in conformity with the Convention's provisions, it did not mean that such discharges could not be considered as illegal when adversely affecting the inhabitants of one of the riparian states of the Rhine. Thus, victims of pollution caused by waste salt would still be able to obtain compensation for the damage they had suffered.¹¹⁶

In the meantime, another jurisdiction intervened in the case of the dumping of waste salt into the Rhine. In conformity with French legislation, such dumping had to be authorized by the *prefet* of the concerned

115. *Trail Smelter Case*, 3 Int'l. Arb. Awards 1905 (April 16, 1938 and March 11, 1941).

116. Both decisions of the District Court of Rotterdam have been summarized in Lammers, *supra* note 48, at 186-190. The District Court of Rotterdam rendered its final decision in December 1983. Appeals can be made to the Court of Justice and, at the highest level, to the High Court.

departement. In 1980, the authorization formerly given to the MDPA was renewed. That decision by the *prefet du Haut-Rhin* was contested by various Dutch local entities, such as the province of North Holland, the City of Amsterdam, water authorities, and water supply services. The competent administrative jurisdiction, the Tribunal administratif de Strasbourg, was asked to decide the formal legality of the renewal of the authorization delivered by the *prefet*. This decision of July 27, 1983 is particularly important, for several reasons. First, the decision admits that aliens and even foreign public authorities may intervene in an administrative procedure in France, stating that no rule of international law, no legislative provision or other general principle of law, restricts the rights of foreign public entities in France. The Tribunal also recognized that the plaintiffs had an interest to act because they had to ensure the supply of water for human and agricultural use. The most important principle applied in the decision concerns the extraterritorial effects of the procedure prior to the decision to authorize the dumping of waste into rivers. The Tribunal held that the administration must prohibit activities which may have abnormal and serious noxious consequences outside the limits of national jurisdiction.

This principle, in conformity with principles of international law and with rules of municipal public law, requires that when the administration envisages authorization for the dumping of waste into surface waters which could seriously alter their quality outside the limits of national jurisdiction, the administration first must inquire into the effects which such dumping may cause in foreign territories. In this way, the administration can be fully aware of the consequences of the authorization outside the limits of national jurisdiction. Not unexpectedly, the authorization given by the *prefet du Haut-Rhin* has been cancelled.¹¹⁷ This important decision may be considered not only as a particularly interesting application of Principle 21 of the Stockholm Declaration, but also of the OECD principles on transfrontier pollution.

CONCLUSION

Legal developments concerning the protection of the Rhine against pollution show that nothing can be done in this field at the national level. Pollution control in Europe requires international cooperation. Such cooperation should take place in the most adequate territorial framework,

¹¹⁷ La province de la Hollande septentrionale c. le Ministre de l'Environnement, Tribunaux administratifs de Strasbourg (July 27, 1983). The text of the decision was published in 3 REVUE JURIDIQUE DE L'ENVIRONNEMENT 343 (1983).

which is the river basin. Although international cooperation exists for the Rhine, further progress is not only necessary but inevitable.

Another lesson learned from the history of Rhine pollution is that such pollution cannot be prevented by liability rules only. Even when in existence, those rules did not work at an interstate level because the concerned governments were reluctant to raise the issue of international responsibility of the polluters. This attitude is in conformity with a worldwide trend to avoid international responsibility. Liability rules, however, are also difficult to enforce in the relationship between polluters and victims of pollution. Even if the "trial of the Rhine" reaches a final conclusion, which is by no means certain, the whole procedure has taken nearly ten years. Victim compensation must be high enough to deter future polluters.

The improvement in the level of chemical pollution of the Rhine nonetheless illustrates that the drafting of international rules and constant institutional cooperation between the concerned states are the most promising avenues to progress in pollution control. This requires, however, not only the goodwill of the governments, but also their concrete intervention. Real progress was achieved only when, ten years after the establishment of the International Commission of Koblenz, the ministers of the riparian states took up the matter. In the present state of international relations, intergovernmental institutions are necessary to ensure permanent cooperation, but their competences are generally so limited that political bodies must also participate in the international action for the protection of shared environmental resources.